

LETTER  
TO A  
PHYSICIAN  
CONCERNING

Acid and Alkali.

Being an Answer to a late Piece,  
Intituled, *A Dialogue between*  
ALKALI and ACID.

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Μωμήσεται τις μάλλον ἢ μιμήσεται· Διογ.

Non soles respicere te, cum dicas injuste alteri?

Plaut. in Pseud.

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*By a Gentleman.*

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L O N D O N

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*Dialogue*, much less to the writing Remark on it.

Upon this account I have forbore to take notice of the first twenty Pages, concluding, that as undecent personal Reflections are no marks of Probity and Virtue, so they are below the cognisance of a generous mind.

γλᾶσσα βλάβουμι & διανοίας κακῆς ἔλεγχω.

I confess I am amazed to see the Ingenious Author of the *Hypothesis* of *Acids*, treated with the utmost Contempt and Scorn without so much as one *Author's* examining the truth of his *Hypothesis* by Reason and Experience. I think it becomes men of Letters, *Gentlemen* and *Philosophers*, and *Physicians* are, to weigh and consider the force of every man's reasoning, and not with unmanly reflections to condemn a *Doctrine* which they will not take pains to examine in any other way than a Jest: as if the Life and Health of mankind were a Trifle to be play'd upon in a Satyr.

*Poetry* is indeed a very pretty thing: but I must agree with you that the Character of a *Satyrist* and a *Physician* are vastly different and as for those *Gentlemen* who value themselves upon a *Sarcastical couplet* press'd against its will to affront a *Professor* of *Physick*, I must esteem them as a more *Gentle* sort of *Mountebanks*; for altho there be little more Wit and fine Language in those



*Gentlemens Satyrical Bills* distributed by the *Booksellers*, than in the dull *Grimace* of a Market stage, yet the nature, design, and effect of the *Farce* is the same: for Diseases not being to be cured with a *Jest*, the *Patient*, who is taken with these witty recommendations, is at once bubbled of his Money and his Health: and for his remedy shall have the Honour to be distinguished in the next *Lampoon*.

But for my part, I shall never trust my Life in the hands of a *Physician*, who takes so much pains with his Pen, to convince the world that he is a rare *Poet*, till by a demonstration he proves that a *Correct Canto* will cure a disease.

Sir, I must observe that the *Author* of the *Dialogue* has not given one Experiment, or laid down the process of any one Medicine he would recommend to the world, for the good of Mankind, or that might overthrow the *Hypothesis* of *Acids*; tho he could not but be sensible that Dr. *Colebatch* had honourably and fairly offer'd his Method of practice to the Critical Observation of the Learned. I have therefore confirmed my Arguments with a variety of Experiments, to which I could have added a far greater Number; but I reserve them, that if this *Author*, or any for him, think fit to give Answer, they may be produced for your Service.

In



In the mean time having resolved to pass over the first twenty Pages for the Reasons intimated already, I proceed to consider our *Author's* Arguments whereby he endeavours to defend *Alkali* as not being the cause of Diseases.

And this he does by intimating, that *Alkali* cannot be the cause of Diseases, for that other causes, that are not *Alkali's*, may be assign'd; and instances in the τὸ ἐνόημα, which he defines, to be *the Soul or Mind of man in its exorbitant Appetites*. It concerns not me to examine this definition, for if I take it for granted, it no way militates against the *Hypothesis* of *Acids*; for, when we speak of the cause of a Disease, which *Physicians* are said to discover, and by Medicines to remove, we always suppose the *Proximate Cause*, which this τὸ ἐνόημα never can be: as I shall by and by evince, after I have taken notice of some other things which this *Author* assigns as the cause of a Disease; *viz.* the undue Conformation of the solid parts, as being too hard, or too soft, too little, or too great, too narrow, or too wide in proportion to one another: from which, he says, divers Diseases, on divers occasions, may proceed, and instances a large disproportionate Liver, small Lungs, narrow Veins, Cartilaginous Aorta, single Kidney, &c.



To which I answer, that the undue conformation of the solid parts is no Disease, so long as they retain their due firmness of texture; nor can be supposed the cause of any Disease, when they perform their peculiar Offices of Secretion, &c. For, supposing the Organs of Hearing, Seeing, Smelling and Tasting, be disproportionate as to size or shape, they are not called Diseases; nor do I know what Distemper they can produce: did you ever know any Distemper caused in a Stag, from a *Cartilaginous Aorta*, which is that *Physicians* call the bone of a Stag's Heart? Nor can he assert that ever any man was diseased, or died because of narrow Veins, or small Lungs: 'tis true, that Pain is often produced from the capillary Vessels of the Brain, and other parts, being too much distended by a violent ebullition of the Blood: but no reasonable man would ever assign the cause of that Pain to proceed from the narrowness of the Veins, for Persons who have very large Vessels suffer the like pains.

I have often observed in the dissecting of Bodies, who have had one of their Kidneys obstructed by Stones, Gravels or schirrous Tumors, and Ulcers, that the sound Kidney and Ureter hath been enlarged considerably by the great influx of Urine, and hath performed the Office peculiar to both. But



to prove that the distempered Kidney in such cases is caused by an *Alkali*, I need only advise you to examine the Stones, Gravel, &c. taken from thence, which upon trial will exhibit the *Phaenomena* you can expect from most fixt *Alkalies*.

A large Liver is no more a Disease than a large Nose, but rather of excellent use; for the Liver is design'd to secrete the *Bile*, that most pernicious excrement of our Bodies: so that according to the rules of proportion, the larger the Liver is, the greater quantity of Bile it will secrete, and the more we are benefited thereby.

But if he means a large Morbid Liver, I see no reason why he should not grant it to be caused from a Superabundancy of Gall: for amongst all the Animals that I have dissected, who had their Livers distempered, I found them always ting'd with Gall: and among Butchers it's the common indication of a rotten Sheep, when the Liver is not of a florid complexion, but ting'd with the bile: therefore if in such Cases there be a disproportionate Liver, it must be from some *Heterogeneous* Particles of matter obstructing the Juices in their Circulation through the Capillary Vessels of the Liver; from whence it becomes enlarged in Magnitude: and this is frequently the effects of a Superabundancy of bile; for when the Liver is overcharged



ged with that Lixivious *Alkali*, the tone of its parts is thereby vitiated, and render'd incapable of aptly secreting that destructive Juice, and emitting it through its proper Emunctories.

Our *Author* tells us that Diseases are caused from the Juices of our Bodies, being sometimes too thick, or too thin: But I say it is from some Particles of matter admitted into the Blood, that is both the Cause of the Disease, and of the thickness or thinness of the Blood: for if there were not a retention of some Particles of matter which ought to be carried off, or an admission of others that should be prevented, the Blood would neither be too thick, nor too thin; but always have the same consistency. And in *Physick* it may pass for demonstration, that if you find the Blood of a Person labouring under a Rheumatism, Scurvy, or Gout, to abound with *Alkali*, and be viscous; and after he is cur'd by the use of proper *Acid* Medicines, you then find his Blood yield a less quantity of *Alkali* and be florid, and of a good consistency; I say, it's to me a demonstration that his Disease proceeded not from *Acids* but from *Alkalies*, which we found to superabound while he labour'd under those Pains, but evidently decreas'd upon recovery by the use of *Acids*.



That this is matter of fact, will appear to any man that will make the Experiment : and I dare affirm that he cannot produce one Instance, of any Person's being cur'd of the foremention'd Distempers by the most Celebrated *Alkalies*. But to reassume the discourse of the τὸ ἐνστικτὸν. 'Tis apparent (says our Author) that the exorbitant Desire or violent Action of the Will of Man, is that which often produceth such effects in our Bodies, as when perceiv'd become a Disease : for by them the Blood is too much retarded in its Course, as well as the more subtil Liquors variously disorder'd, and that these cannot in an instant produce a greater quantity of *Alkali* than the Body can bear.

He should have told us what these exorbitant Desires were, and what their Effects ; whether the exorbitant Desire of Money, Women, Revenge, or Popular Applause : if he means such, then I need not tell you what are their effects, for *Tyburn* gives undeniable Proofs that by them the Blood comes to be too much retarded in its Course, as well as the more subtil Liquors variously disorder'd.

But if by produce, he means create any Particles of new matter which were not preexistent in the Blood and Juices, I know no man that will affirm such an absurdity as the immediate Production of *Alkali* by the operation



operation of the Mind. A disappointment of the Will I know will of a sudden cause a relaxation of the whole *Systema Nervosum*, whereby Perspiration with all the other Secretions are obstructed, and the Organs of Respiration prevented from performing their Office; which accidents are often observ'd to attend Women: and by such a relaxation of the *Nerves*, and Constipation of the *Pores*, there are frequently induc'd *Convulsions*, and *Hysterical* Indispositions: and these Symptoms are produc'd no otherwise from a disappointment of the Will, than as it is an antecedent Cause, which Medicine does not remove; but only concerns it self about the immediate cause, the *Materia ex qua constat*, to wit, the Blood and Juices being imbu'd too plentifully with malignant Particles of matter, which I say are *Alkalies*, whose Secretion is by the aforesaid accidents prevented, and the total Retention of which is alone sufficient to produce the most dismal Symptoms. And seeing no man denies, that a firmness of texture in the Nerves, and a free Perspiration, with all the rest of the Excretories performing their Offices of Secretion, are indispensably necessary for the preservation of Health: I defy him to prove that Nature ever secretes any thing that will come under the denomination of an



*Acid* when in a state of Health. A Morbid Body, when the Nerves are relaxed and the tone of the Parts vitiated, I know will sometimes eject the most benign Juices, which should conduce to the support and preservation of the Subject, as in *Scrophulous, Cancerous, Venereal, and Cachectical Bodies, &c.*

Page 22. He supposes there should be *ten, or twenty parts of Alkali* in a sound Man's Blood; to one of *Acid*; and from either of these Principles exceeding their proportion infers, that the *Acid* or the *Alkali* may be said to abound: but so long as they keep up to that standard, neither of these Principles can be supposed the cause of a Disease. From which I may naturally infer, that these or the like Proportions are constantly to be found in a state of Health, and that when either of these Principles exceed such measures, a disorder in our Bodies of one kind or other must ensue.

I have for some years been in a state of Health, and so according to this supposition my Blood must have then abounded with such like proportions of *Acid* and *Alkali*: so that it behoves me to take care that whatsoever I eat or drink should yield but one part of *Acid* to ten or twenty of *Alkali*. But on the contrary I have taken quite other measures, for within these last twelve Months



Months I have drank for many days at least a Quart of Crab-Verjuice in twenty four Hours, which alone was sufficient to impregnate my Blood with six times the quantity of *Acid* he is pleased to allow it : and you know there's considerable quantities of *Acid* to be obtain'd from *Bread*, *Wine*, *Oranges*, and *Lemons*, of all which I take no inconsiderable quantities ; but instead of being in the least disorder'd by them, I find my self more vegete and sprightly : if at any time I want an Appetite, the eating of *Lemons*, or drinking some other proper *Acid* restores it. I could give you a multitude of Instances where *Gentlemen* have complained, that after the taking of such Medicaments as their *Physicians* call'd *Alkalies*, their Distempers have been exasperated, their Appetites pall'd, but by the use of *Acid* Medicines they have been wonderfully relieved in a very short time ; of the truth of which you may be inform'd by enquiring of a multitude of *Apothecaries* in this City.

Page 23. After our *Author* has given us some Experiments made with *Acids*, and *Alkalies*, mixt in Syrup of Violets, he asserts, that there may be *Acid* enough in the Blood to cause a Disease, tho it will not turn the Syrup green ; but he has not prov'd it.



From the beginning of the 24<sup>th</sup> Page of his Dialogue to the 29<sup>th</sup>, there's nothing but Scurrility, and Quotations out of *Etmuller*, *Hoffman*, *Helmont* and *Hypocrates*; so that the strength of his Arguments depends altogether upon an *ipse dixit*.

Page 29. He says he is certain that *Acids*, as *Oil of Vitriol*, *Spirit of Nitre*, *Oil of Sulphur*, &c. coagulate and thicken the Blood, but very fallaciously teaches a wrong way of trying the Experiment: his directions are, to mix a little of either of the abovemention'd *Acids* with a little of the Blood, or Serum; by the which I understand he made his Experiments on Blood that had stood some time in the Porenger, when the grumous part was coagulated, and a Separation made of the Serum: a very irrational way of trying the Experiment, when the question is whether an *Acid* when taken inwardly, and diluted in a proper Vehicle, will coagulate Blood when it's warm, *fluid*, and perpetually circulating through its Channels, by which means there's made a due Commixture of all its parts with whatever is ingested.

But to convince you that *Acids* will not coagulate Blood when judiciously used, Take 4 or 5 Drops of *Oil of Vitriol* or *Spirit of Nitre*, and dilute it in 3 or 4 Spoonfuls of Water; such a proportion of *Acid* is as  
much



much or more, than can be admitted into the Blood at any time when taken inwardly : when you have opened a Vein, begin to drop your *Acid Mixture* into the Porenger, proportionable to the Stream of Blood ; at the same time begin nimbly to agitate their parts with a Goose Quill, or the like, continuing the motion of your Feather till the Blood is cold. By this Method I have with *Oil of Vitriol, Spirit of Nitre, &c.* not only preserv'd Blood fluid, but also free from Putrefaction, the last of which is what neither Volatile nor fixt *Alkalies* will do, as may be seen by the following Experiments.

### *Experiment I.*

*January 9th*, I mixt with one parcel of Blood taken from a Woman who then laboured under a Pain in her Head, and right side about the region of the *Liver*, 6 Drops of *Oil of Vitriol* diluted in two Ounces of Water ; and it not only preserv'd the Blood fluid, but gave it a much better Colour and Consistency than some of the same Blood had, with which I mixed nothing. I then put it into a Viol, and after having kept it by me about 18 days, I pulled out the Cork, and it was equally free from any Smell or signs of Putrefaction as when it streamed from the Vein : the quantity of Blood  
made



made use of in this Experiment was about 5 or 6 Ounces.

### Experiment II.

With a like proportion of the same Woman's Blood, I mixed 30 drops of Oil of *Tartar* (which you know is a fixt *Alkali*) diluted in two Ounces of Water, and the Blood seemed to remain fluid while it stood in the Porenger; but after I had poured it into a Viol, and suffered it to stand close stopt for 3 or 4 days, I observ'd that the grumous part thereof was precipitated, and it stunk most intolerably: the Smell was much like that proceeding from a dead Body, whose *Lungs* or other *Viscera* have been ulcerated, and too long expos'd in the Air.

### Experiment III.

I also mixed with a like quantity of the same Woman's Blood, twenty Drops of *Spirit* of *Nitre* *dulcifi'd*, diluted in two Ounces of fair Water, and it preserved the Blood fluid, gave it a better Colour, and hindered any of its parts from subsiding; neither did it stink in the least, so long as I kept it by me, which was about 28 or 30 days.

*Expe*



## Experiment IV.

After the same Method I mix'd with four Ounces of the said Person's Blood, 30 Drops of *Spirit of Sal Armoniac* which is an *Alkali*, and it preserv'd the Blood fluid; but after seven or eight days keeping I open'd the Viol in which it was close stop'd, and it sent forth a very offensive stink.

Sir, if these Experiments are not sufficient to convince you of the falshood of our Author's Assertion, *viz.* that *Acids* cause a putrefaction in animal Substances, I have a variety of others at your service.

Page 30. He begins to argue *à juvantibus & ledentibus*, and says, that *Acids* are pernicious in *Hypochondriack*, *Hysterical* and *Scorbutical* Cases, in divers kinds of Ulcers, and Issues; and on the contrary, that these are reliev'd and eased by *Alkalies*. But we have only his bare word for't, for he hath prov'd neither; and should I undertake effectually to prove that *Acids* are the only Medicines which cure those Diseases he has nam'd, it must be by enumerating Observations of Cures perform'd by them; which wou'd, I am afraid, make this Epistle too long. Therefore I shall only trouble you with the naming some of the most celebrated Medicines in use in the

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cure



cure of those Distempers, as *Steel* in all its best Preparations, all the *Acid Spirits* and *Elixirs*, *Crem. Tart.* *Tart. Vitriolat.* *Sal Succ.* &c. all which in your practice you are very well acquainted with; and I refer you to what *Dr. Colebatch* hath said on the Subject in his Treatises already published.

In the same page he says, that from Blood or Urine, of either healthy or diseased Persons, an *Acid* is to be obtain'd; but having not told us the Process, I must beg his pardon if I don't believe him.

Again, he says that he can mix an *Alkali* and an *Acid* so, that in distillation there shall come over no *Acid*, but an *Alkalious Liquor*; and that he can mix an *Alkali* and an *Acid*, and there shall be neither an *Alkali* nor an *Acid* obtain'd from them, but a *Salsum*.

Again, he says that he can mix an *Acid* with an *Alkali*, and the result of the Experiment shall be, that neither an *Alkali*, *Acid*, nor *Salsum*, shall be obtain'd from them; but like a cunning Man, he will not show us how these Tricks of *Legerdemain* are to be perform'd, lest we should discover the Imposition.

Page 31. The natural or artificial Combination of an *Acid* and an *Alkali*, he says will make a *Salsum*; but I call it an *Acid*.



*Acid*, because the *Acid* is most predominant and does operate as such : for if you take good *Tart. vitriolat.* which he calls a *Salsum*, and dissolve it in Water, this Solution shall work upon Filings of Steel as manifestly as Spirit of *Vitriol* which is allow'd to be an *Acid*.

The Blood he says appears Salt to the taste, which he calls a *Salsum* : but it's plain to him who will taste Blood, that the Salt taste thereof hath no Analogy to the Mixture of an *Acid* with an *Alkali*, no more than the mixture of Juice of *Lemons* and Salt of *Wood*, the one an *Acid* and the other an *Alkali*, hath with Oil of *Tartar*, or any other manifest *Alkali*.

Seamens being troubled with the *Scurvy* he assigns to proceed from their eating Flesh and Fish too much salted, whereby the Spirituous and Volatile parts are too much exhal'd ; and that common Salt acts not as an *Acid*, but as a *Salsum*.

I answer, that common Salt by often dissolving and chrystalizing shall be so much deprived of its *Bittern*, as to act as an *Acid*, by dissolving Filings of steel, and making an ebullition with *Alkalies*, &c. or if you would do it at once, pour one ounce of Spirit of Salt into two Quarts of a strong Solution of common Salt, then evaporate and chrystalize ; and so you will have the Salt



of a finer and larger Grain, and much more wholesom and useful in all Cases. The reason of which I take to be this, that the *acid Spirit* of Salt does correct the *Bittern* that is in all common Salt. When that is done, it shall remain of a closer Texture not apt to run into Liquor; but one pound thereof shall serve and do as much as four of the common Salt, as I have known myself.

Now Sea Salt being prov'd an *Acid*, I cannot imagine how it should be the Cause of the *Scurvy*, when there's scarce a better Medicine known for its Cure than *Spirit of Salt*. And a *Scurvy* being the Symptom of a Putrefaction in some degree of the Juices of our Bodies, it will still look more like a *Paradox*, that Salt, which is the known Preservative of dead Flesh, should be the Cause of Putrefaction in that which is alive: Nor will the want of the spirituous and volatile parts of Flesh and Fish, appear to be the cause of any Disease, when you consider that *Physicians* commonly prescribe their *venereal Patients*, &c. Flesh roasted or boiled to dryness, and such other Food as yield the least quantities of spirituous and volatil *alkalious* Parts, as Watergruel, dry Bisket, and Raisins, &c. Now if I did not design brevity, I could produce several Instances to prove, that *Acids* are not the Cause



of the *Scurvy*, but that they are the only salubrious Medicines in use against that Distemper. Particularly in a worthy *Gentleman*, who for many years had been extremely afflicted with the *Scurvy*; but after the ineffectual use of many Medicines prescribed by *Physicians* of the best Reputation, was at last, as he told me, prevail'd upon, by reading *Dr. Colebatch's* Tracts, to eat *Lemons* plentifully, and he quickly arriv'd to the Perfection of eating 30 in a day. By which Method he recover'd, and enjoys a perfect state of Health. The *Gentleman's* Name I have not mention'd, because I had not the opportunity of asking his Consent.

Another Assertion our Author makes without any Proof or Experiment given, is, That tho a coldness or moistness of the Air hinders Sweat, yet we perspire more when we don't sweat than when we do: which I apprehend thus, that we lose more in weight when we sit still in the open Air and in a cold frosty Morning, than if we were sweating in the *Bagnio*; which I say may be prov'd a Mistake by a multitude of Experiments made at the *Hummums* and other Sweating-houses, where it's plain, that we lose more in weight by one hours sweating than we do in four without it.

Sweating and Perspiration I apprehend to differ only *secundum Majus & Minus*; they both



both are consequents attending the open Pores of our Bodies, and therefore I think it would be ridiculous to imagine that a cold or moist Air opens the Pores to promote Perspiration, and shuts them at the same time to prevent Sweating.

Our *Alkali* man confesses in the same Page that he cannot see how an *Acid* can be separated from Sea Salt when in the Blood and other Juices of the Body ; and in the next Page affirms, that *Acids* are found separated in further recesses than the Stomach and Guts, which I think cannot be, from Bodies more easily to be dissolv'd than Sea Salt. Neither is there any other Separation requisite to be made of Sea-Salt or any other Food ingested, but a dissolution of their Texture, so that every Particle of them may be at liberty to exert themselves ; and such a Separation of Salt is commonly made before *Deglutition*. Besides, it's plain that Bones and such like solid Substances are in a great measure dissolv'd in the Stomachs of *Dogs, Ostriches*, and other Creatures of a voracious Appetite.

Page 32. He says, *Acids* are found separated in further recesses than the Stomach and Guts : one Instance he gives is that of a Cancerous Breast, cut off by Mr. *Smith*, who was poyson'd by tasting an *Acid* Liquor found therein, so as to be the occasion  
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of his death some Months after ; and that it was so penetrating like *Aqua fortis*, that he could not wash away the taste thereof, as he affirm'd on his death-bed to the *Physician* who gave him the account.

Sir, a Man that's poison'd is commonly *delirious* on his death-bed ; and it's not unusual to hear such in their *Phrensy* accuse the most proper Medicine of being the cause of their death. But supposing Mr. *Smith* was poison'd, it will follow, according to his own Assertion, that it was not done by an *Acid*, because, says he, I cannot see how an *Acid Spirit* can be separated from any thing while in the Blood. But granting that it was a strong *Acid* like *Aqua fortis*, how will you account for its not making way through the Breast before Amputation ? Again, had it been a strong *Acid* like *Aqua fortis*, it could not fail of raising an *Escar* on Mr. *Smith's* Tongue who tasted it, which had it done, it would then have been impossible for him to taste the Liquor so long after, because the mortified Flesh wou'd have fill'd his Mouth with a stink far surpassing that of any *Acid* Liquor. I presume, Sir, that the *Physician* who told him this Story, had the care of Mr. *Smith* during his Sickness, and without doubt fail'd not in exhibiting the most Celebrated *Alkalies* ; but it appears they did him no service, for which



which reason I believe the Liquor he tasted did not kill him without other help.

Page 33, 34. In the *Small-Pox*, *Scurvy*, and *Gout*, he says it may be reasonably suppos'd, that the Blood of Persons so diseas'd yielding a greater quantity of *Alkali* than at other times, doth proceed from the *Acid* Particles being precipitated, and so fix'd in the extremities by their meeting with the *Alkaline*; so that the Blood flowing in the Veins, being depurated from the *Acid*, it must therefore yield a greater proportion of *Alkali*.

But this Supposition of his is easily overthrown, by Chymically analyzing those Chalky Substances separated from the Blood of Persons afflicted with the *Gout*, and fixed in the Extremities, which you will find plainly to exhibit the *Phænomena* peculiar to *Alkalies*.

He is also very kind in telling us what great difficulties attend the distillation of Blood, so as to be able to say, within a grain here's all the *Alkali*, or *Acid*, in so much Blood. But I know, tho'tis difficult to give Judgment to a Grain in the distillation of Blood, yet the difference is so manifest between *Morbid* and *Sound* Blood, that three-score or more Grains may be allow'd for perspiration through the *Lute*, deficiency of  
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of Fire, or the waste in large Glassess, or the want of room in small ones, when you make use of the same Method in distilling of both.

Page 35, 36, 37. The *Saliva* he says is not an *Acid*, because it will turn *Syrup of Violets* green. Sir, this Experiment does not prove that the *Saliva* is not impregnated with a manifest *Acid*, which is what Dr. *Colebatch* asserts: for there are a multitude of other Bodies which will turn the *Syrup* green, yet have in them a manifest *Acid*, as *Oils* and *Vinous Spirits*, which tho they have in them a manifest *Acid*, yet it is so intangled or sheathed in the other parts of the *Fluid*, that it cannot be unlocked or set at liberty, to exert it self by so clammy a Body as *Syrups of Violets*, yet they operate on other Bodies by virtue of their *Acid*. So *Oil of Turpentine* will dissolve *Copper*; and it's the *Acid* that is in *Sulphur*, that makes the *Mercury* so easily embody with it by rubbing, as in *Ethiops Mineral*, and so likewise in *Turpentine*, *Spittle*, &c. and because he says it's from the *Turpentine* consisting of ramous and flexible parts, which I think is the same thing with saying they consist of nothing at all; for till he shews me those ramous and flexible parts, I must believe it is from the *Acid* that is in them that they embody with *Mercury*. Again, the *Saliva*, &c. receive  
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their Denominations of *Acid*, not from quantity, but quality; for were they divested of that which gives them the name of *Acids*, they would fail in answering those intentions which with it they perform. As for the insipid *Calxes* that kill *Mercury*, I believe it false, till he tells me more of it; for there is none that I know of will embody with *Mercury*, and hold it so long as *Saline* or *Acid* Bodies will.

The Trial he made on *Saliva*, was on that taken from sound Persons that often eat and drink *Acid* things; by which I understand that their frequent using of *Acids* did not impair their Health: and in the distillation thereof he found a *Sal Salsum* in the *Caput Mort.* from which might be obtain'd a manifest *Acid*.

*Blood*, *Serum*, and other *Animal Substances* (says our Author) give an unpleasant Smell when evaporated on the fire, but the *Saliva* will yield a grateful Savour. Sir, you know that *Nutmegs*, *Cinamon*, and all odoriferous Vegetables abound with *Acid* and *Sulphur*, from whence according to their different modifications proceed those grateful Smells. Is it not then reasonable to conclude that the pleasant Smell arising from *Saliva* when evaporated, comes from an *Acid* or *Sulphur*? for all *Animal Substances*, when tending to corruption, emit a noxious Smell



and from them in that state you cannot find a *Salsum*, such as he had from *Saliva*.

Now he says that there's no need of any *Acid* in the Stomach, and tells us that his Stomach is always best when there's not so much *Acid* in it as will curdle Milk. In answer to this I say, there may be an *Acid* in his Stomach, tho not so much as will curdle Milk: for a small quantity of Wine, when poured slowly into Milk, will not curdle it; and you know that Wines have in them a manifest *Acid*. Nay, which is more, take a small quantity of Vinegar diluted in Water, and pour it into Milk gently, and there will ensue no *Coagulum*. There are a great many Vegetables in whom *Acid* abounds, which when decocted in Milk will not coagulate it.

Page 40. He will not allow that the *Saliva* acts in the stomach as an *Acid*, notwithstanding an *Acid* may be obtain'd from it. But to convince you that the *Saliva* does act as an *Acid*, I shall enquire what Juices are brought into the stomach to cause hunger, which may be known by considering what Vessels communicate their Juices to that *Viscera*. 'Tis plain that neither the *Veins* nor *Arteries* convey any of their Juices into the cavity of the Stomach, nor is it properly speaking the *Lymphatick* Vessels; neither can it be the Nerves, for I know



not that they have in them any such quantities of Liquor. I conclude then that Hunger is caused by that Juice strain'd from the *Salival Glands*, which is continually in a state of Health more or less conveyed into the Stomach by the pressure of the Muscles: and you may observe that in Fevers, &c. where that moisture is deficient, the Patient has no desire for Food. Hunger is also caus'd by the eating *Lemons, Oranges*, and such like *Acids*. Now if Hunger is caus'd only by *Acids*, I desire him to prove what Juice is brought into the Stomach from any other part of the Body, that yields a greater quantity of *Acid* than *Saliva*.

He proceeds to deny the truth of two Cures that Dr. *Colebatch* tells us he perform'd on Persons afflicted with the Stone; and argues against the opinion of there being some Vessels passing from the bottom of the stomach to the Kidneys. I confess that in all the Bodies which I have dissected I could never discover any such Ducts, for which I assign this reason, that all Vessels which have not in them a quantity of Liquor after death, and are not of a very firm Texture like the Blood-Vessels or *Ureters*, are very difficult to be found or trac'd, because they lie flat and appear like *Membranes*. But to corroborate the notion of there being some undiscover'd *Cannulas* passing from  
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the Stomach to the Kidneys, I shall from Authority give you the following Observations as circumstantial Proofs.

Dr. *Havelin* of *Plimouth* gives an account of a Patient of his who was *Minister* of *St. Martins* 12 miles distant from thence, who having voided by *Urine* considerable quantities of Herbs that were mixt with his broths; and that he having given him some *Gummous* Pills, he also voided two of them through the *Urinary* Passages, which the *Doctor* had by him not long since.

In the *Philosophical Transactions*, Vol. 2d, Tract. 4th, Page 803. Dr. *Fairfax* tells us of a Patient of his who voided a leaden Bullet through the *Urinary* Passages; and subjoins his opinion, that there are Vessels which pass from the bottom of the Stomach to the Kidneys.

A very ingenious *Gentleman* told me that Dr. *Mayow's* elder Brother, who he says is a Man of great Veracity, assur'd him that he having used a *Bochet* in which Raisins were boyl'd, the Liquor not being strain'd when drank, he discharg'd two of them through the *Urethra*, tho with some difficulty.

But if you please to advert to *Dimerbrook's Anatomy*, you will there find the History of several Persons pissing Needles, *Alkekengi*, *Mellon Seeds*, and other solid Substances: besides, I have observ'd that in



10 or 20 minutes after the eating of *Asparagus*, or taking a few Drops of Oil of *Turpentine*, that the Urine has been highly perfum'd by them.

Now he endeavours to obviate this by saying, that Cows Milk will taste of the *Crow Garlick*, and it will be very hardly got out of the Cheese made thereof: but this doth not at all derogate from the reasonable opinion that there are some undiscovered *Cannulas* passing from the Stomach to the Kidneys, because from the Guts there are the *Venæ Lactææ* which have immediate communication with the mamillary Glands, and help to compose them; by which means it is that if a Woman suffer a Child to suck Milk from her Breast that day wherein she takes purging *Physick*, the Child shall be purged also.

Page 45, 46. The *Bile* he allows to be the most *alkalious* matter in the whole Body; and the *Dung*, he says, yields a fixt *Salt*, like to that obtain'd from the *Gall*, which no other part of the Body doth: but urges, that the *Gall* is mixt with the *Chyle* to prevent any *Acid* from entring the mass of Blood; that the *Gall* attempers the *Chyle*, and doth great service, tho detain'd in the Body; that there's not seen more evil effects from the *Gall's* retention in the Blood, than from its absence in the Guts.



I answer, that the Dung affording a fixt *Salt* like to that obtain'd from *Bile*, which he says no other part of the Body will do ; and the *Chyle* not appearing ting'd with greenness, nor Milk yielding any such fixt *Salt*, which it certainly would if the *Bile* were mixt therewith, are plain Indications that the *Gall* is carried down with the rest of the Excrements, but not mix'd with the *Chyle*. Neither will it appear reasonable to imagine that the *Gall* should be carried into the *Venæ Lactææ*, when you consider how narrow those Vessels are, and how thick the *Bile* is, especially when mixt with an *Acid*.

The *Gall's* presence in the Guts can be of no other use than that it's in a way of being ejected by stool ; and if it be detain'd in the Guts, the consequences are very dismal, as violent *Colick* pains, an *Iliaca passio* : but if any quantities of it pass downwards, a *Diarrhea* ensues, which if too soon stopt, will not fail endangering the Patient's Life. When the *Bile* is brought into the Stomach by an inverted motion of the Guts, produc'd by its *Lixivial* Particles vellicating their Fibres, then corrosive Pains in that *Viscera* ensue, with enormous vomitings. It may be known that these Symptoms are produced from that Juice, by the Excrements being tinged therewith, or the Patient vomiting quantities thereof : and I always observe, that  
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drinking large quantities of Water or Posset-drink when the *Gall* is lodg'd in the Stomach, causing pain, immediately gives ease, after which they vomit; and according to the discharge of *Bile*, such is their relief. If it stop in the *Liver*, it produces violent Pains therein, and sometimes makes it *schirrous* and *ulcerate*, if it remains in the Blood. Various are the disorders it produces, according to the place it affects, as the *Jaundice* violent Pains in the Head and Back, a depress'd Pulse, an universal Languor, with a multitude of other Symptoms too tedious to enumerate.

I assisted in the opening a *Gentleman's* Body, where was found the *Gall-Bladder* empty; one part of the *Liver* was *schirrous* and *ulcerated*: in the *Brain* we discover'd a *Mortification* under the left side of the *Os frontis*: both Lobes of his *Lungs* were *ulcerated*, and appear'd to be nothing else but a Mass of rottenness. This *Gentleman* led a *Sedentary* Life, which with other Causes concurring, prevented the *Bile* from being carri'd into the *Guts*, and hinder'd the *Liver* from secreting it. His Friends told me that his first complaint was a pain in his right-side; this proceeded from the *Bile* remaining in the *Capillary Vessels* of the *Liver*, whereby a regular *Circulation* of the *Juices* through that *Viscera* was prevented,  
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and therefore it became *schirrous*, lost its tone, and was disabl'd from separating the *Bile*, and at last ulcerated. The Liver thus ceasing to perform its Office, the Gall regurgitated or continued in the mass of Blood, and fix'd it self on those parts whose strength was least able to resist it, as the *Brain* and *Lungs*, producing in them the foremention'd Symptoms: and I have frequently observ'd those Bodies stink soonest in whom the *Gall Bladder* was found empty; particularly that of a Child I lately open'd, who died complaining of a Pain in its Stomach and Guts. I found the Liver very much ting'd with *Bile* and by grasping the Stomach in my hand, I forc'd upwards about two Spoonfuls of the *Gall*, which discharg'd through the Nostrils; for the Mouth being very close shut, it could not discharge that way. I also found a small quantity of *Bile* in the *Intestinum rectum*. All which I think were sufficient Indications of the Child's death proceeding from a Superabundancy of *Gall* brought into the Stomach and Guts, the only parts of which it complain'd; and this Body stank intolerably.

But to convince you that *Acids* are admitted into the Blood, I shall put you in mind of the *Pancreatick Juice*, which is manifestly *Acid* to the taste. Nay, *Chyle* taken from the *Venæ Lactææ* of a Dog some hours after

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he had been well fed, I have by tasting perceiv'd it manifestly *Acid*, when it has been kept some time. And you know it's from a distribution of the *Lacteal Juice*, that an increase and subsistence is given to all the parts of the Body.

So Milk, which is only a more elaborate *Chyle*, by long keeping turns sour, not from its being expos'd to the Air; for if you put it in a Glass, and having exhausted the Air, you seal it up *Hermetically*, it will notwithstanding all your care become sour. And how far a deprivation of that Juice is a cause of Leanness, may by common Experience be seen in wet Nurses.

Thus, contrary to his assertion of the *Gall* being a strict guard preventing any *Acid* from entering the Garison of our Bodies, I think it's prov'd that *Acids* ingested are admitted into the *Vena Lactea* with the *Chyle*, and consequently carried along with it into the mass of Blood; without which it were impossible we could subsist, as may be seen by that Experiment mention'd in Dr. *Needham's* Piece *de format. Fat.* where he says that Dr. *Lower* having tore the receptacle of the *Chyle* in a Dog, and preserv'd him alive, having stitch'd up the external Wound, the Dog, tho very well fed, died the fourth day, being starv'd to death: and having open'd the Body, he found the *Chyle* in great quantity



tity lodg'd in that part of his Breast which was wounded.

Page 65. *Acids* are by him denyed to hinder Putrefaction in animal Substances, from *Oil of Vitriol*, or *Spirit of Nitre* pour'd on the red part of Blood, and turning it into a black Corruption, and the *Serum* into a white purulent matter: so *Bladder*, *Leather*, *Flesh*, *Skins*, *Tendons*, he says, have their textures destroy'd by *Acids*.

I have already answer'd the first part of this Objection, and have told you this is a fallacious way of trying the Experiment: for tho *Oil of Vitriol* alone will coagulate Blood when it is cold, and a Separation made of its *grumous* parts from the *Serum*; yet if it be diluted in a proper quantity of an *aqueous Vehicle*, which is the method of giving such strong *Acids* internally, it will preserve the Blood fluid, and free from Putrefaction.

I have preserv'd an *Embrio* with two Ounces of *Spir. Nitri* diluted in a convenient quantity of Water, and its texture hath not in the least been destroy'd thereby, but hath been free from any Smell or signs of Putrefaction: and retain'd a florid complexion all over the Superficies. 'Tis the *Acid* of *Salt* which preserves *Flesh* and *Fish* from Putrefaction; for if you divest the *Salt* of its *Acid*, what remains will never do the business. *Vinegar* and *Salt* are the chief ingredients



gredients made use of in preserving *Cucumbers, Capers, Walnuts, Kidney Beans, &c.*

*Animals*, says our *Author*, that yield half their weight of an *Acid* Liquor, putrefy sooner than others that abound more with an *Alkali*. But he hath not told us what *Animals*; and if I grant what he says, it will not prove that their Putrefaction is caus'd by the great quantity of *Acid*, but from their deprivation of it: for when the *Animal* was alive, and had all its *Acid*, then there were no signs of Putrefaction in it; but being dead, and the *Acid* thereof gone off in *Effluvia*, there's no reason to wonder that the remaining Substances should putrefy.

Page 66. *Vegetables* that yield most of an *Acid* and *Oil* in distillation, he tells us will rot sooner than others; as *Crabs, Oranges* and *Lemons*, will rot sooner than *Apples* that are not so sour.

Sir, every years experience informs us how false this Assertion is; for *Lemons* are longer preserv'd than *Apples*, and will not putrefy but when bruis'd: *Lemon-peel* is of use many years, if preserv'd only by drying; but the skins of *Apples* will not keep so long. *Crabs* also I am told will preserve longer than *Apples*, but if they rot sooner, it's from the loss of their *Acidity*; for when putrefy'd, they are no longer sour. I have kept a *Vegetable*



getable two years in Water acidulated with Spirit of Salt, and it hath remain'd sound and intire; but I defy him to show me an *Alkali* either volatile or fixt, that will preserve *Animals* or *Vegetables* from Putrefaction.

Page 67. *Allum* he asserts is not an *Acid*, notwithstanding an *Acid Spirit* is to be obtain'd from it in great quantities; nor doth it operate as an *Acid*, because, says he, it turns Syrup of *Violets* green. Again, he says, *Allum* is us'd in making of *Leather* on the account of its astringency, to make the *Skins* more compact. Sir, upon tryal I find it's the *Chalky Substance* in *Allum* which renders the Syrup green: for if you take the *Acid Spirit*, and mix it with Syrup of *Violets*, the Syrup will be turn'd red; and it's the *Acid Particles* of the *Allum* that make the *Skins* compact; for if you separate the *Acid* parts of the *Allum* from the *Chalky Substance*, that remaining matter will be of no such use.

His Query, how *Coffins* made of *Oak* and the most resinous *Fir*, which have in them plenty of *Acid* and *Oil*, are consum'd, when the *Bones* that abound with *Alkali* remain firm, I can easily answer: for it's plain that Rottenness is produc'd in them from the *Alkalious* Flesh and Juices of the putrefying *Cadaver* they contain, emitting plentifully their *Effluvia*, which having no vent continue to undulate



undulate round the Confines of the Coffin, and by degrees entring the Pores of the wood produce in it rottenness. The reason why *Bones* corrupt not so soon as the *Coffins*, proceeds from the hardness of their *Cortex*, having smaller Pores than Wood, that will not so readily admit these *Alkalious Effluvia* to enter them. And I observe that *Bones* which have been long buried, are always more rotten than those preserv'd for *Skeletons*. *Oaks* and *Firs* are not so easily consum'd by lying in the Earth as he imagines; for in many places of *Scotland* there are every year dig'd out of the earth large *Oaks* and *Fir-trees*, which no man now living can remember ever grew, or were buried there: these *Firs* have not in them any signs of Putrefaction, but when dri'd are us'd by the Country People instead of *Candles*; and in burning they afford great quantities of a resinous Substance: but the Barks of these Trees are commonly rotten, for in them is to be found very little of an *Acid* or *Oil*.

Page 68. *Acids*, he says, are not the only things will allay thirst, for *Nitre* will do it. By Experience I know that if you take from *Nitre* what is *Acid*, the remaining Substances will not quench thirst; but the *Acid Spirit* given in a due proportion with a proper *Vehicle*, will do it much better than *Nitre* given in substance.



*Oil of Vitriol*, he says, is a noble Medicine in Fevers. I agree with him, and by experience I know it is so; but he says that he knows an *Alkali* that is better; I desire he would produce it, otherwise I shall believe it to be an *Acid*.

I think it's not material whether the Experiments try'd on Dogs, by injecting into their Veins *Oil of Vitriol*, be true or false; for that's not the method of giving *Acids* I contend for, not that I question, but if they were judiciously made, they would answer the Character those *Gentlemen* have given of them.

Page 72, 73. He offers no reasons against the giving of *Acids* in the *Small-Pox*, but says that he has given *Alkalies* with Success, yet hath not told us what *Alkalies* they were.

Sir, the use of *Acids* in the *Small-Pox* is now so generally believ'd and practis'd, that I need not trouble you with Arguments from that *Topick*, especially when I consider that your own experience enables you to speak more in their praise than I am able to do: however I shall subjoin the following story, as it was told me by a *Chirurgion*, who formerly belong'd to the *Army*, and is a man of great veracity. He says that during the time which he quarter'd in *Portsmouth*, which is about five or six years ago, a multitude



titude of that *Regiment* to which he belong'd had the *Small-Pox*, and he gave them for their constant drink large quantities of *Spir. Vitrioli* diluted in fair Water, andedulcorated with *Syrup. Garyophyllorum*; and the Success he had was generally taken notice of throughout the Garrison: for tho in another Regiment that quarter'd in the same Town, and had no greater numbers of Men sick than he had, they seldom fail'd of burying twelve or fourteen men every week, yet in their Regiment there did not die one man in six or seven weeks time: but he confess'd to me not to have us'd *Acids* then, for the reasons that he does now; he says he knew that *Acids* would quench thirst, but never imagin'd they would cure a Disease.

The *Alkali* in the Blood, our Author says, cannot be put into a hurry alone, nor when mixt with the smallest quantity of *Acid*; but more *Acid* added produces a greater heat.

I answer, that a mere *Acid* given in great quantity will not produce a greater heat in our Blood, as may be seen in the exhibition of Oil of *Vitriol* to Persons in Fevers, or in the mixing *Volatile Salt* of *Hartshorn*, or *Sal Armoniac*, which are *Alkalies*, with *Spirit* of *Vitriol* an *Acid* which makes a coldness, but I will not say so of *Sulphureous Acids*.



Page 81. The *Chalky* Substance generated in fits of the Gout, he says, will not prove the Disease to be caus'd by *Alkalies*: for, says our *Author*, *Alkalious Salts* when in solution are not coagulated alone, but by meeting with *Acids*. I say that *Alkalious Salts* when in solution, are coagulated with what he calls *Alkalies*: for *Spirit* of *Hartshorn*, or *Spirit* of *Sal Armoniac* made with *Salt* of *Tartar*, or any other volatile *Alkali*, will embody with *Copper*, and make what is call'd *Salt* of *Vitriol*, if they are suffer'd to stand together in the cold for a Month. And the same *Spirit* of *Sal Armoniac*, &c. which he allows to be an *Alkali* in solution, will in distillation so intimately unite it self with *Lime*, which is a fixt *Alkali*, that he shall never be able to separate any volatile *Alkali Salt* from it again. Indeed it may have the Smell of a volatile *Alkali*, but there's no volatile *Alkali Salt* to be got from it, as may be seen; for if the aforesaid *Spirit* be three or four times distill'd from good *Lime*, it shall be so far from what we call an *Alkali*, that it shall make no ebullition with a manifest *Acid*.

Page 82. He denies that the *Offa Alba* is a Coagulation of the *Vinous Spirit* with the *Urinous Salt*; but says, that it is a precipitation of the *Urinous Salt* out of its *Flegm* by the effusion of the *Vinous Spirit*. I must tell

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you, that this *Gentleman* grossly mistakes what *Offa Alba* is. 'Tis no precipitation of the Salt, but a *Coagulum* of the *Vinous* and *Vinous Liquor* into one Body: for it's as much in a *Coagulum* at top as at bottom, and the top has as much Salt in it as the bottom; and if he lets it stand for some little time, it will be reduc'd into one intire *Liquor*.

Page 83. He says we cannot drink *Vinous Spirits* strong enough to coagulate the *Alkalious Spirit*. What will he think of some that I have seen drink high rectifi'd *Spirit of Wine*? and he allows that high rectifi'd *Spirit of Wine* will precipitate *Alkalious Salts*. If the aforesaid *volatile Spirits* are distill'd from *Testaceous Powders*, such as calcin'd *Oyster-shells*, *Cockle-shells*, &c. the *Alkali Volatile Salt* will be destroy'd.

Moreover, says our *Author*, this *Offa Alba* is so very *subtil* and *volatile*, that it would easily find passage, and be carried off through the Pores by a gentle heat, and be so far from coagulating into a *Chalky Substance*, that it is a good Medicine to thin the Blood. The Salt of this thing, which he calls *Offa Alba*, will, if you try it, fix it self with common *Lime*, *Oyster-shells*, &c.

P. 89. *Iron* is not an *Acid*, he says, because it blunts and absorbs *Acids*, making an effervescence with them, and is dissolv'd by them. But I answer, *Iron* making an effervescence with



with an *Acid*, is no more an Argument that it is an *Alkali*, than that *Butter of Antimony* ( which is allow'd to be a strong *Acid* ) is an *Alkali*, because it makes a violent effervescence with *Spirit of Nitre*, or *Spirit of Vitriol*, which are *Acids*. Neither is *Iron* properly an absorber of *Acids*, but of *Salts* in general: for if you please to try, it will be dissolv'd by *Acid*, *Alkali*, or what he calls *Sal Neutrum*. If you put upon filings of *Iron* a volatile *Alkali*, such as *Spirit of Urine*, *Spirit of Sal Armoniac*, or *Hartshorn*, &c. there will a gentle ebullition ensue: it it stand in the cold ( for in the heat the *Alkali* will soon be driven away ) and this will last for a day or two, then you'll find the *Spirit* to be impregnated with the *Steel*, tho it is but little. And *Crem. Tart. Tart. Vitriolat.* Common *Salt* will dissolve *Steel*, as may be seen in several Preparations of *Tart.* and *Steel* to be had in the *Chymists* shops. From whence may be inferr'd, that *Steel* is not properly an absorber of *Acids*: And so likewise of other *Metals*; for they will be dissolv'd by some *Salts*, some very easily, such as *Copper*, and others with trouble, if the operation be perform'd by the unskilful.

But to go a little further in the matter, and do something towards proving that *Steel* abounds with *Acid* and *Sulphureous Particles*, which is what he denies, and not



with *Alkalious*, and so consequently ought to be call'd an *Acid*: I shall first show that *Iron* or *Steel* ( for I shall use the words promiscuously ) is very much impregnated with *Sulphur*; and then prove, contrary to his Assertion, that there is a burning *Brimstone* to be obtain'd from it. 'Tis a common Observation, that filings of *Steel* flung through the flame of a Candle, will take fire sooner than *Gunpowder*, and as soon as common *Brimstone*. The violent motion of the Flint and Steel, or two pieces of Steel together, does the same that the immediat flame of the Candle does with the filings.

When the filings of *Iron* are in dissolution with *Spirit* of *Salt*, the fumes that arise out of the Glass will take fire; and if done in a convenient Glass, and a lighted Paper held to the Fumes close to the neck of the Glass, it will take fire, and fulminate as loud as the noise of a Musket. I hope by this time the *Gentleman* may be satisfi'd that there is such a thing as common *Brimstone* in *Iron*: if not, I shall only desire him to take a quantity of *Sal Martis*, and dissolve it in common Water, then add a quantity of *Oil* of *Tartar* somewhat more than enough to precipitate the *Iron*; afterwards evaporate all this muddy Liquor to dryness, without separating any thing of the precipitate from it; then flux what remains  
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with a little *Charcoal* in a strong fire, and he will have a very *Sulphureous Salt*; which if he dissolves in Water, and filter it, he may precipitate from this Solution by the help of distill'd *Vinegar*, or *Spirit of Salt*, a *Sulphur* which will burn and stink like common *Brimston*: or if *Tart. Vitriolat.* and filings of *Iron* be mixt together, and put into a strong *Hessian Retort*, and then into a naked fire, and continu'd there for twelve or sixteen hours; what remains in the *Retort*, must be taken out, and dissolv'd in Water, afterwards precipitated by the help of any of the abovemention'd *Acids*, the precipitate will be an inflammable *Sulphur*. I have not mention'd the proportion of *Tart. Vitriolat.* and filings of *Steel*, because I am talking to a *Chymist*. If these Experiments will not suffice to prove that there is a *Sulphur* in *Iron*, I may chance to produce twenty more of different sorts; but I suppose these will satisfy the reasonable, and then I must conclude *Steel* to be rather an *Acid* than an *Alkali*, till I am convinc'd by matter of Fact that what is call'd a *positive Alkali*, may be obtain'd from it: And I hope no Person will doubt, that if I can get a *Sulphur* from *Steel*, but I may also get an *Acid* in quantity.

*Page 91.* Every rational Man, he says, will think *Acids* so far from being useful to

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cure a Disease caus'd from too much *Acidity*, that he will account it no less than *Ignem oleo extinguere*, to use them in such a case. Now I shall tell you, that *Acids* do operate upon, and alter the Texture of one another; and if so, I am sure that a Disease caus'd by *Acids* may be cur'd by *Acids*. If the Texture of a Body be alter'd, its Qualities must be so too, and it must act differently from what it did before. All which is plainly seen in that very common Experiment in *Chymistry*: for if you take good strong *Spirit of Nitre*, or *Aqua fortis*, it shall immediately dissolve *Silver*; but if you mix with this *Spirit of Nitre*, or *Aqua fortis*, some *Spirit of Salt*, which is another *Acid* as strong as it self, it shall immediatly be so alter'd, that it shall never be able to dissolve *Silver* as it did before.

He says, the *Doctor's* preparation of *Steel* with *Sal Armoniac* is not made with an *Acid*. I think it is; and to prove it to you, if you make this Preparation in a *Retort* and a strong Fire, you shall find nothing but an *Alkali Spirit* to arise, and the *Acid* will remain with the *Steel*: for if you take the *Caput Mort.* and distil it as other *Acid Spirits* are generally distil'd, you shall have nothing but a pure *Acid* come over, of great use in *Physick* and other things.



But to prove it yet further, I shall trouble you with an Experiment or two more: If you dissolve filings of *Steel* in *Spirit of Salt*, which is allow'd to be an *Acid*, and distil it as before in a *Retort*, you shall find the *Caput Mort.* the same with that made of *Sal Armoniac*; which I also try'd by a *Microscope*, and found the Texture to be the same. And to satisfy you yet further that it's not the common *Salt*, but the *Acid Spirit* of it, that is one part of the compound of *Sal Armoniac*, and *Volatile Alkali* the other, you may make a Mixture of *Volatile Alkali* and *Spirit of Salt* together, and the produce will be very fine and good *Sal Armoniac*; from which *Sal Armoniac* you may again separate the *Alkali*, and then make the *Doctor's Preparation of Steel*.

The Author of the *Dialogue* is angry with Dr. *Colebatch* for saying *Cinnaber* is an *Acid*, but hath not prov'd nor said that it's an *Alkali*. He says, a pound of *Cinnaber* will yield thirteen Ounces of running *Mercury*, and that the *Sulphur* which remains is not an *Acid*, but a mixture of *Oil* and *Acid*. I refer it to all the World, whether running *Mercury* will act as *Cinnaber* does: if it does not, than *Cinnaber* does all by virtue of the *Sulphur* embodied with it; which *Sulphur* is an *Acid*, for he allows it to be compounded of an *Acid* and an *Oil* (but not of  
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an *Acid* and *Alkali*) therefore I think it must come under the denomination of an *Acid*. And as for *Mercury* being the greatest Absorber of *Acids* in the world, I believe it rather an Absorber of all kind of *Salts* either *Alkali* or *Acid*: it will mix and embody with *Alkalies* as well as *Acids*; it will dissolve *Metals*; which is an Argument often us'd by the *Author* to prove the *Acidity* of a Body: it will ferment with *Gold*, if well manag'd, and make such a heat as is not to be endur'd by the hand: and I never met with two *Alkalies* that would ferment with one another; but I have often met with two *Acids*.

Page 93. He says he will oppose one *Alkali* Medicine to all the *Acids* in the world, viz. the *Quintessence* of *Wine*. I wish the *Author* had told us how to make this *Medicine*, that it might be us'd, and judg'd whether it be so noble an *Alkali* or not.

But his meaning must be guess'd at; suppose it then to be the finest rectifi'd *Spirit* of *Wine*, that cannot be prov'd an *Alkali*, but the contrary: or suppose it to be a fine *Spirit* or *Essence* talkt of by some, which is so *volatil* and *subtil*, that a drop let out of a Bottle, shall not reach the ground, but fly away; such an *Essence* of *Wine* I have seen, and can make at any time, and do affirm that it will come under the denomination of *Acid*.



Page 99. The *Acid Spirit* of Sea Salt (our *Author* says) will not preserve Flesh from Putrefaction. In answer to which I shall only remind you of what I have already said on that Subject, *viz.* that the *Acid Spirit* of Salt will, if diluted in a convenient quantity of an *Aqueous Vehicle*, preserve Flesh from Corruption better than common Salt; and that common Salt may be made much more useful in all respects, by adding to a strong Solution thereof a proper quantity of *Spirit* of Salt.

Page 100. He laughs at Dr Colebatch for asserting that it's the *Bittern* in Salt which excites thirst; and in opposition to him affirms, that *Bittern* is not an *Alkali* but an *Acid*, because *Spirit* of Salt is to be obtain'd from it in distillation: but he hath not told us in what quantity, for he knew that the proportion was inconsiderable to what remains after distillation, there being at least four parts of *Alkali* in *Bittern* to one of *Acid*: which *Alkali* will turn Syrup of *Viols* green, and answer the Intentions of a very strong *Alkali*. I have known Soap made with it, and that's not to be done without a great quantity of *Alkali*: if *Bittern* be calcin'd as it ought to be, it will then as an *Alkali* do other things, which I shall not mention at this time.



Again, tho Spirit of Salt may be obtain'd from *Bittern* by distillation, yet this will not prove that *Bittern* is an *Acid*, or that the said Spirit is any part of the *Bittern*: for it's only some remains of the *Acid* part of the Salt, because the *Bittern* after distillation will exert it self more powerfully in causing thirst, than it will do before it's depriv'd of the *Acid Spirit* of Salt; and the same Spirit taken from *Bittern* will allay thirst when judiciously us'd.

Sir, I am of opinion that our *Author* cannot produce a *Catalogue* of *Medicines* equally efficacious in the cure of Diseases, with *Merc. dulcis*, *Turpeth. Min.* *Red. precipitat.* the natural and artificial *Cinnabers*, *Sal Succini*, *Sal Martis*, *Ens Veneris*, *Ol. Vitrioli*, *Spirit. Nitri*, *Ol. Sulphuris*, and Dr. Colebatch's *Elixir Vitrioli*: all which operate in the Cure of Diseases by virtue of their *Acids*; for if they are divested of their *Acid Particles*, they will never be able to produce those effects which with them they perform: and if the use of *Alkalies* cannot be thus demonstrated, I shall remain a Proselyte to the Doctrine of *Acids*.

Thus I have given you my thoughts in answer to those Objections that seem most material in that *Dialogue*; but have purposely omitted taking notice of any thing contain'd therein, that has not a relation



relation to *Acids* or *Alkalies* being the Cause or Cure of Diseases: and in so doing hope that I have answer'd your Request, with which, and the repeated Assurances of my readiness to serve you,

I take leave to subscribe my self,

S I R,

Yours, &c.

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F I N I S.



William Coyle =  
1739. 4 pp. MB.







